National Institute of Environmental Health Sciences

# Chronic exposure to ambient ozone and asthma hospital admissions among children

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**Abstract:**

BACKGROUND: The association between chronic exposure to air pollution and adverse health outcomes has not been well studied. OBJECTIVE: This project investigated the impact of chronic exposure to high ozone levels on childhood asthma admissions in New York State. METHODS: We followed a birth cohort born in New York State during 1995-1999 to first asthma admission or until 31 December 2000. We identified births and asthma admissions through the New York State Integrated Child Health Information System and linked these data with ambient ozone data (8-hr maximum) from the New York State Department of Environmental Conservation. We defined chronic ozone exposure using three indicators: mean concentration during the follow-up period, mean concentration during the ozone season, and proportion of follow-up days with ozone levels > 70 ppb. We performed logistic regression analysis to adjust for child's age, sex, birth weight, and gestational age; maternal race/ethnicity, age, education, insurance status, smoking during pregnancy, and poverty level; and geographic region, temperature, and co-pollutants. RESULTS: Asthma admissions were significantly associated with increased ozone levels for all chronic exposure indicators (odds ratios, 1.16-1.68), with a positive dose-response relationship. We found stronger associations among younger children, low sociodemographic groups, and New York City residents as effect modifiers. CONCLUSION: Chronic exposure to ambient ozone may increase the risk of asthma admissions among children. Younger children and those in low socioeconomic groups have a greater risk of asthma than do other children at the same ozone level.

**Source:** http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2599770

## Resource Description

**Exposure :**

weather or climate related pathway by which climate change affects health

Air Pollution, Temperature

**Air Pollution:** Interaction with Temperature, Ozone

**Temperature:** Fluctuations

**Geographic Feature:**

resource focuses on specific type of geography

Rural, Urban

**Geographic Location:** ☑

resource focuses on specific location

United States

**Health Impact:** ☑

specification of health effect or disease related to climate change exposure

Respiratory Effect

**Respiratory Effect:** Asthma

**Population of Concern:** A focus of content

**Population of Concern:** ☑

populations at particular risk or vulnerability to climate change impacts

Children, Low Socioeconomic Status, Racial/Ethnic Subgroup

**Other Racial/Ethnic Subgroup:** hispanic; african american

**Resource Type:** ☑

format or standard characteristic of resource

Research Article

**Timescale:** ☑

time period studied

Time Scale Unspecified